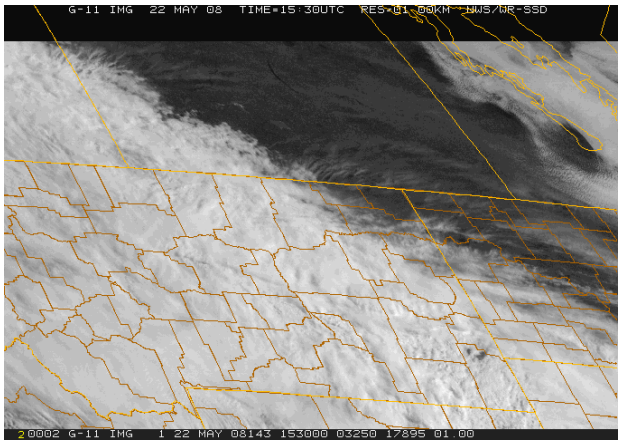
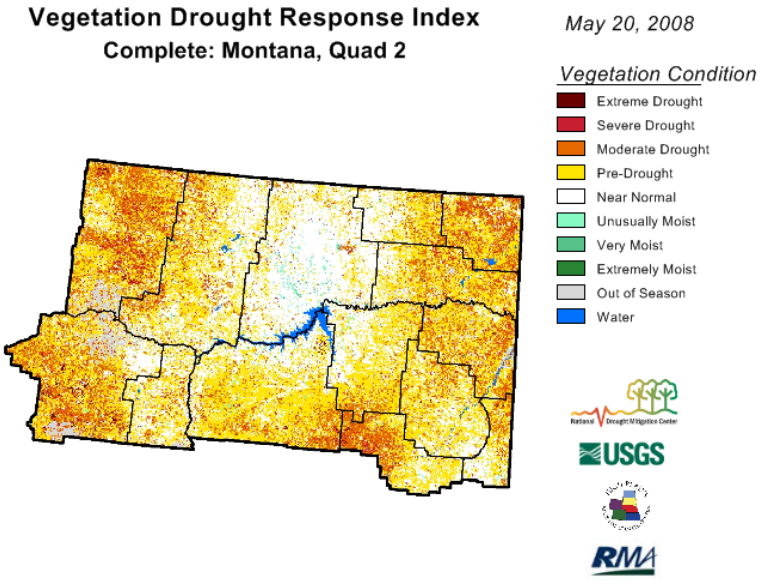


Under the Big Sky
May 22, 2008

Floods and Drought: Many of you have probably read about or seen on the news that they are experiencing some flooding conditions in the western portions of the state. In some areas, the snowpack was fairly high in places this winter and last weekend's warm temperatures allowed for a lot of melting into creeks, streams and rivers. The Yellowstone River was having some mild flooding from Livingston to Billings. Rises of 2.5 to 5 feet are expected from Friday through Sunday on the lower Yellowstone from Miles City to the confluence of the Missouri River, but the river is expected to remain well below flood stage at those locations. The Milk River basin will see some rises, but much of that water will be caught in Fresno and Nelson Reservoirs to hold for irrigation purposes, so the Milk River from Malta to Glasgow shouldn't see any significant rises. We've had some good precipitation this month, but we also have had a lot of wind, and that is evaporating a lot of the moisture out of the soil. The State of Montana Drought Advisory Committee met today as well, and you can get details from that meeting at: http://drought.mt.gov
If you'd like to see some of the rainfall totals from yesterday through this morning, go to: http://www.wrh.noaa.gov/total_forecast/getprod.php?sid=GGW&pil=pns&wfo=ggw

VegDRI: Back in March I wrote some information from the National Drought Mitigation Center about a new product they produce called VegDRI. The 2008 products started on May 5th, and it was updated again today. http://drought.unl.edu/vegdri/VegDRI_Main.htm?EV



UV Index: This past weekend was probably the first time many of you pulled out your sunscreen for the season. This is just a reminder that the NWS and the EPA do have a UV Index, with a UV forecast that goes out four days that is available to you. We include the UV index for the current day, or the next day on the regional weather summary that plays on the NOAA Weather Radio. We generally include that information from Memorial Day through Labor Day. You can also access it online at: http://www.epa.gov/sunwise/uvindex.html. The website has a service where you can have the UV index for your zip code emailed to you on a daily basis.

Due to our northerly latitude, the highest values we would normally see would be in the 8-10 range. To see what each of the ranges mean, visit: http://www.epa.gov/sunwise/uvindex2.html

Weather Radio Campaign is back on in Montana! Last fall we worked with Midland Radio, Albertson's and John Pulasky with the Northern Ag Network to promote weather radio usage statewide. The campaign is back on for the summer with the Montana CBS station weathermen and women helping to promote it. Your local Albertson's stores will have these NOAA Weather Radios in June through the end of August. If your store doesn't have them, make sure you tell the manager you would like one. They will be on sale for $29.99, normally they cost $49.99! Remember, this is as close at it gets to having the NWS knock on your door to let you know a severe storm is about to hit your area. I personally believe they are as important in your home as a smoke detector. For more information on NOAA Weather Radio, visit our website at: http://www.wrh.noaa.gov/ggw/nwr.php

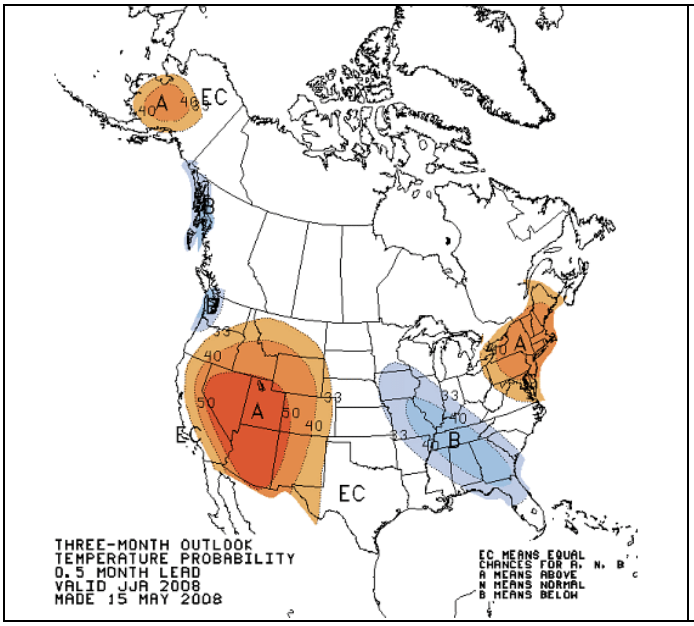
Noctilucent Clouds (From Spaceweather.com): On May 5th, experienced sky watchers in Northern Ireland were surprised by a sudden apparition of electric-blue noctilucent clouds (NLCs). This marks an unusually early beginning to the 2008 NLC season and may herald a spectacular summer of high-latitude "night shining" clouds. NLCs first appeared in the 19th century mainly around Earth's poles. Since then, for reasons unknown, they have increased in number and range, with sightings in recent years as far south as Utah and Colorado. Visit http://spaceweather.com to see the first photos of 2008 and to learn what to look for in case NLCs visit your part of the world in the nights ahead. More information on these clouds can be seen at: http://science.nasa.gov/headlines/y2003/19feb_nlc.htm and http://www.atoptics.co.uk/fz48.htm

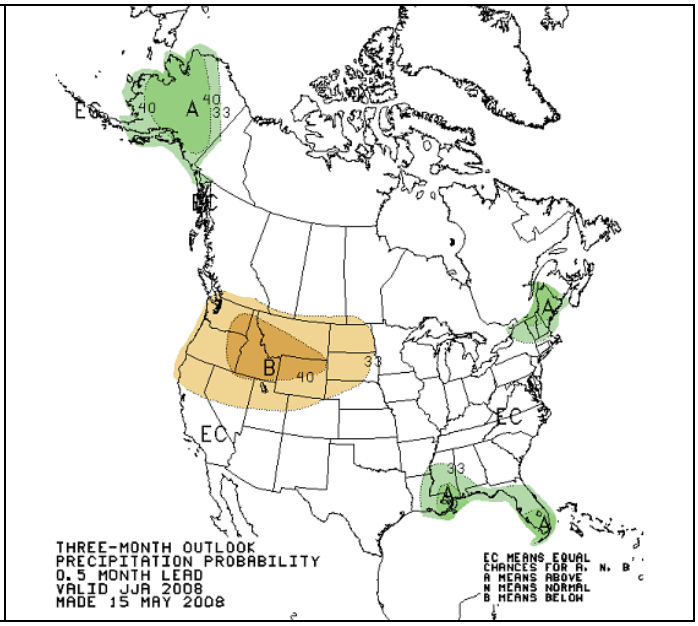
NOAA News:

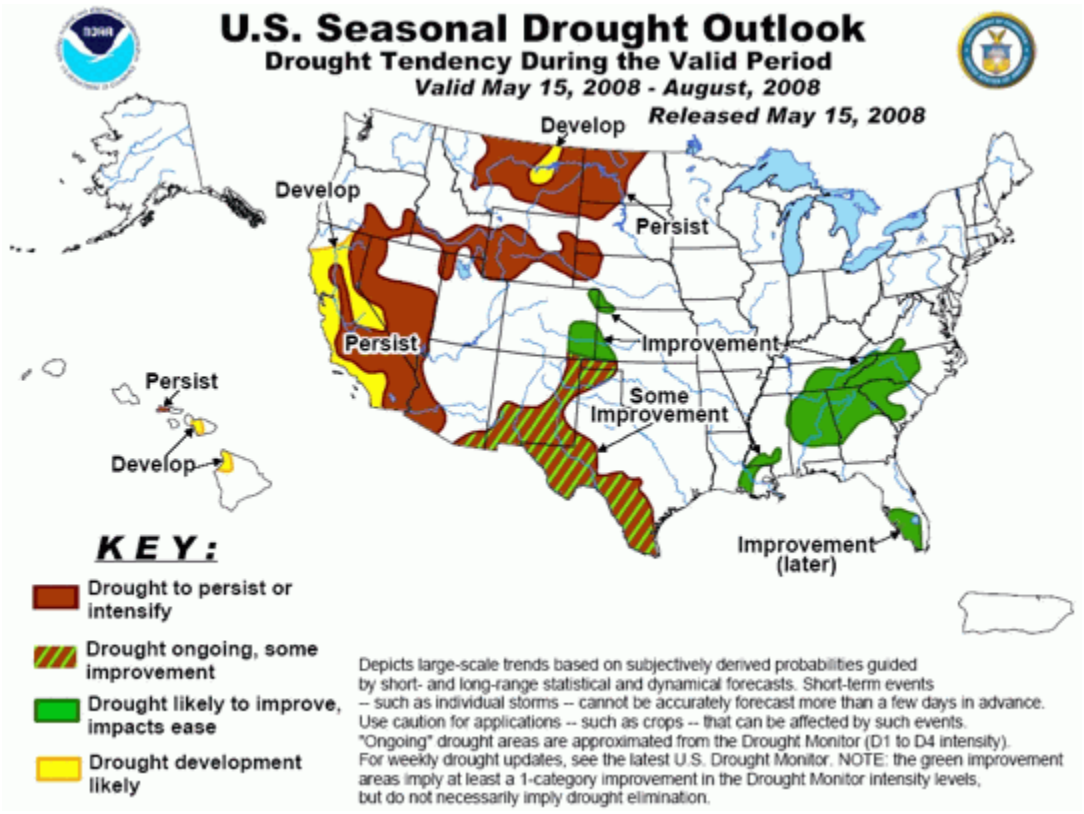
Retired Hurricane Names: The names Dean, Felix and Noel were recently retired from the list of hurricane names. The names of hurricanes are set by the World Meteorological Organization. They recycle the names of hurricanes unless one of causes significant destruction, as the above hurricanes did.
http://www.noaanews.noaa.gov/stories2008/20080513_stormnames.html

North Pacific Humpback Whale Populations Rebounding:
http://www.noaanews.noaa.gov/stories2008/20080522_humpback.html

Climate Prediction Center: Today is the day that the seasonal outlooks have been updated. I've been told by a few locals that the prairie dogs are really bad this year, and therefore it's going to be a dry summer. Well, maybe there's something to that old wives tale?? Here is the temperature and precipitation outlook for June-July-August, as well as the drought outlook:

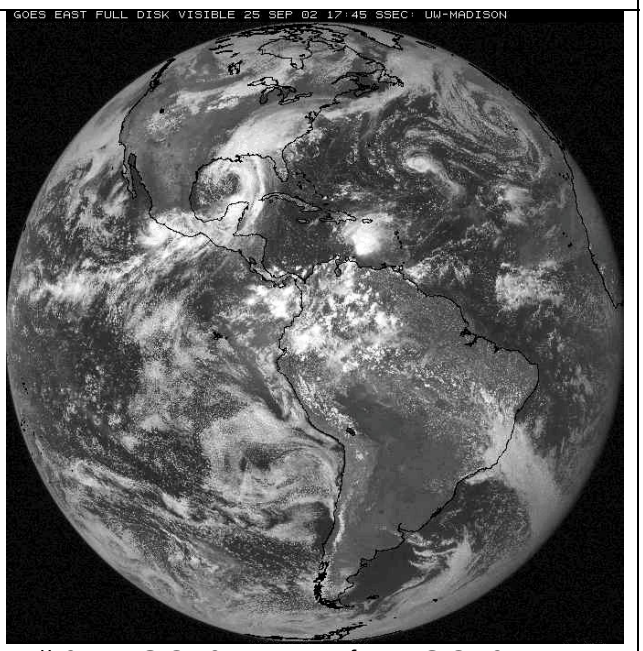




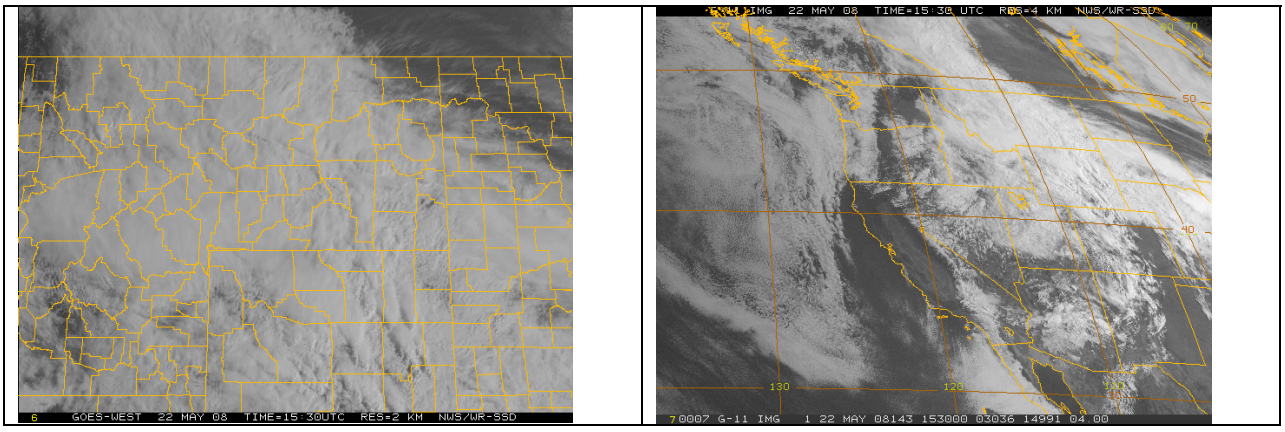


Satellite imagery: The satellite image at the top of the newsletter was a 1 km resolution visible satellite image from the GOES satellite. It shows clouds cover over much of the region, except for extreme NE Montana. Our neighbors in Sheridan County have been greatly struggling for precipitation this year, and this image is a common one we've seen in the past few months where they are not getting the moisture everyone else is. One of the questions I was asked at a Skywarn training this year was about satellite imagery.

We basically have two types of satellites used for weather monitoring. Here's a comparison of the two.

Polar Orbiting Environmental Satellite (POES)	Geostationary Orbiting Environmental Satellite (GOES)
Orbits about 520 miles above the earth. It moves from one pole to the other around 14 times a day. Because the earth rotates below it, the images are not from the same location. Images are highly detailed.	Orbits 22,000 miles out in space, situated over the equator, stays in one location all the time. It can send images much more frequently. We normally get images every 15-30 minutes, but during severe weather can increase that to every 5 minutes. Images are not quite as detailed due to it's distance from Earth. It has different types of images that it sends us: Water Vapor, Visible and Infrared.
Used mostly for things such as climate research, vegetation monitoring, ice movement on rivers and lakes, oceanic temperatures, volcanic eruptions, forest fire detection	Used daily in operational meteorology. The US is covered by GOES-East and GOES-West
 MODIS Imagery showing the hail swath from the June 16, 2007 High Precipitation Supercell that caused over $34 million dollars in damage.	 Full Scan GOES Imagery from GOES-East

I'm going to focus a bit more on GOES now, since that is what is readily available on the internet, and what we use for real-time observations and forecasting. We have different types of resolution for the imagery. The smaller the number, the more detailed it will be, but you will see less area. The 1 km resolution is at the top of the news letter. Here are examples of 2 km and 4 km visible satellite images this morning:



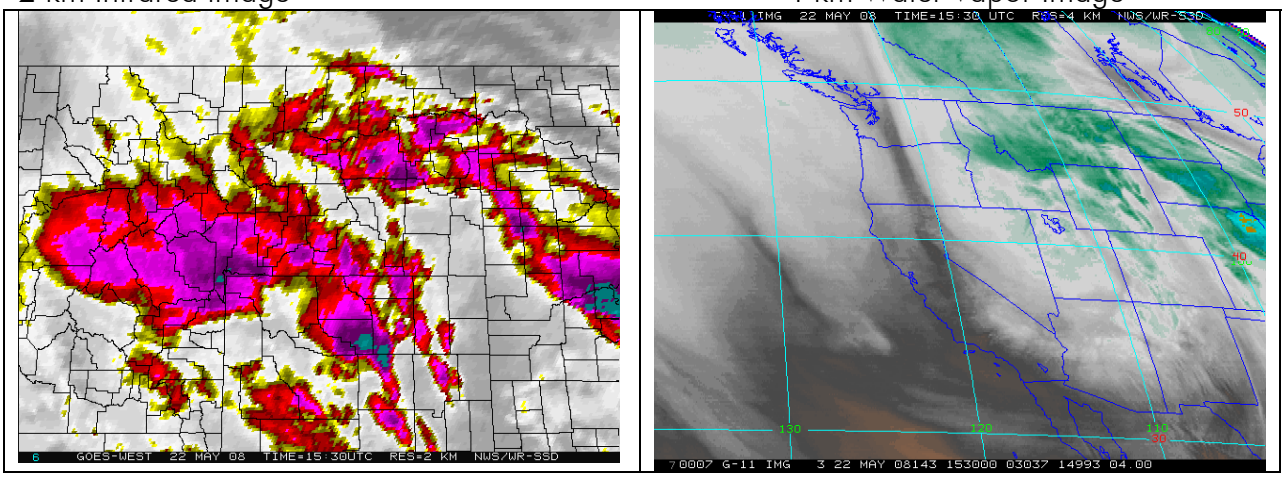
GOES also provides us with different types of imagery. The three most common types are:

1. Water Vapor – shows where moisture is at and where it isn't. It is good for finding little disturbances in the upper level flow of the atmosphere as well.
2. Infrared – shows temperature of the ground and clouds. This is useful for seeing whether clouds are getting colder (thunderstorms that are intensifying have very cold cloud tops) or warmer. It has several sub-categories that help us see intense heat that generally signify wildfires and areas of fog, if there are no higher clouds blocking the view.
3. Visible – This is a "what you see is what you get" image that you would see if you had really super vision and were on the satellite looking at earth. It doesn't work at night since we have no sunlight to see the Earth.

Below are examples of the infrared and water vapor that go along with all the visible images above taken the morning of May 22, 2008. We are seeing some nice rainfall across the area and that is evident by seeing all the bright (cold) clouds in the infrared and the large areas of green on the water vapor.

2 km Infrared image

4 km Water Vapor Image



For further information, or to see current imagery, visit the following sites:

- Introduction to Satellite imagery: http://www.srh.noaa.gov/jetstream//remote/satellite.htm
- A look at the image of the day, an incredible archive of interesting satellite imagery from around the world: http://cimss.ssec.wisc.edu/goes/blog/
- Satellite Imagery for Northeast Montana: http://www.wrh.noaa.gov/satellite/index.php?wfo=ggw